REMARKS

This application has been reviewed in light of the Office Action mailed June 5, 2006. Reconsideration of this application in view of the below remarks is respectfully requested. Claims 1 – 6 are pending in the application with Claim 1 being in independent form. By the present amendment, Claims 1, 3 and 5 have been amended. No new subject matter is introduced into the disclosure by way of the present amendment.

Initially, the claims have been reviewed and amended as necessary to correct grammatical errors and to conform to U.S.P.T.O. standard claim phraseology.

I. Rejection of Claims 1 – 4 and 6 Under 35 U.S.C. § 102(e)

Claims 1 – 4 and 6 are rejected under 35 U.S.C. § 102(e) as allegedly anticipated by U.S. Patent No. 7,019,598 issued to Duncan et al.

While Duncan et al. does teach a tuning range voltage controlled oscillator (VCO), Duncan et al. fails to properly anticipate all the features recited in Applicant's claims.

First, FIG. 45I of Duncan et al. fails to show a pair of output terminals as recited in Applicant's Claim 1. FIG. 45I teaches one output terminal (f_{out}) 1904 only, with no suggestion of a second output terminal. This lack of a second output terminal is acknowledged in the Office Action, but the Office Action asserts that the differential structure inherently provides two output terminals due to the balanced structure. However, the Office Action fails to cite where this second output terminal would be located on the circuit shown in FIG. 45I. Nor does the Office Action provide a motivation for providing a second output in the circuit of FIG. 45I when no such second output is suggested by Duncan et al.

Secondly, Applicant's Claim 1 recites the limitation of an inductor connected between the pair of output terminals. However, it is unclear how the cited inductor 4509 anticipates this

limitation. At best, FIG. 45I shows an inductor 4509 connected to one output terminal 1904. Without a clear indication in the Office Action regarding the identity of the alleged second output terminal, it is difficult to see how inductor 4509 anticipates Applicant's claimed inductor that is connected between the pair of output terminals.

In addition, the Office Action identifies varactor 4515 as anticipating Applicant's claimed variable capacitor connected in parallel with the inductor. In fact, varactor 4515 is shown connected in series with inductor 4509. Therefore, FIG. 45I does not properly anticipate Applicant's variable capacitor connected in parallel with the inductor.

Further, as shown in FIG. 3 of the present disclosure, a second switch 19 connected between the pair of capacitors 12 and 13 is provided, while in Duncan, no such switch 19 is disclosed. Claim 1 recites this second switch as "a second switch provided between the other electrodes of said pair of capacitors".

When no second switch 19 exists, as shown in Applicant's FIG. 1, transistors such as NMOSs are used for the switches 14 and 15. When using transistors as switches, unlike optimal switches, since parasitic components remain at both ON and OFF states, it is impossible to completely connect or disconnect the capacitors 12 and 13 with respect to ground electrodes. That is, when the switches 14 and 15 are in an ON state, the switches 14 and 15 function as resistors, and in an OFF state, as capacitors. Therefore, when the switches 14 and 15 are in an ON state, the electrode potentials at the side of the ground electrodes in the capacitors 12 and 13 are not completely equal to the ground potentials, and alternating components remain as a result of influence of potentials of the output terminals 7 and 8, respectively. As a result, the effective voltage between the electrodes in the capacitors 12 and 13 is reduced, so that the effective capacitance of the capacitors 12 and 13 is reduced. Consequently, even when the switches 14 and

15 are turned on, an effect to lower the oscillation frequency of LC-VCO1 is not sufficiently produced, so that the variable range of the oscillation frequency is reduced.

However, when the switch 19 is provided, as in FIG. 3 of the present invention, this affect is reduced. As shown in FIG. 4A, when first switches 14, 15, and second switch 19 are all turned off, the first switches 14, 15, and second switch 19 function as capacitors, so that the capacitor 12 and the switch 14 being a capacitor are connected in series, and the capacitor 13 and the switch 15 being a capacitor are connected in series. At this time, since capacitance of the respective capacitors formed of the first switches 14, 15, and second switch 19 is smaller than the capacitance of the capacitors 12 and 13, due to the series connection described above, capacitance of the capacitance switch portion 16 is relatively reduced.

As shown in FIG. 4B, when first switches 14 and 15 are turned on, first switches 14 and 15 function as resistors, so that capacitance of the capacitance switch portion 16 as a whole is relatively increased. At this time, if second switch 19 is off, potential of the node N1 is equal to an intermediate potential between the potential of the output terminal 7 and ground potential, and potential of the node N2 is equal to an intermediate potential between the potential of the output terminal 8 and ground potential, and since the potential phases of the output terminals 7 and 8 are reverse phases to each other, the potential phase of the node N1 and the potential phase of the node N2 are reverse phases to each other.

Additionally, if second switch 19 is turned on, since the node N1 and the node N2 are connected to each other by second switch 19, alternating components of the potentials of the node N1 and node N2 cancel each other out, so that both potentials are equalized to each other to approximate the ground potential. As a result, the effective capacitance of the capacitors 12 and

13 is increased, so that the capacitance of the capacitance switch 16 as a whole is further increased. The circuit disclosed in Duncan fails to provide these benefits.

It is well-settled by the Courts that "[A]nticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim." Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Company, et al., 730 F.2d 1452, 221 USPQ 481 (Fed. Cir., 1984).

Therefore, as demonstrated above, because Duncan et al. does not disclose each and every element recited in the present claims, Applicant respectfully submits that the rejection has been obviated. Accordingly, Applicants respectfully request withdrawal of the rejection with respect to Claims 1 – 4 and 6 under 35 U.S.C. § 102(e).

II. Rejection of Claim 5 Under 35 U.S.C. §103(a)

Additionally, the Examiner has rejected Claim 5 under 35 U.S.C. § 103(a) as allegedly obvious over Duncan et al. in view of Japanese Publication No. 11-330852 issued to Wang.

Based on the abstract and drawings, Wang does not overcome the deficiencies identified above with regards to the Duncan et al. reference.

Wang discloses two mutual conductance cells (i.e. a pair of PMOSs) in addition to a pair of NMOSs. However, since Wang does not disclose a second switch 19 connected between the pair of capacitors 12 and 13, Duncan and Wang, taken alone or in any proper combination, fail to properly disclose or suggest the invention as recited in Applicant's Claim 1, from which Claim 5 depends. Accordingly, Applicant respectfully requests withdrawal of the rejection with respect to Claim 5 under 35 U.S.C. § 103(a) over Duncan et al. in view of Wang.

CONCLUSIONS

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims presently pending in the application, namely, Claims 1 – 6 are believed to be in condition for allowance and patentably distinguishable over the art of record.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call Applicant's undersigned attorney at the number indicated below.

Respectfully submitted,

Paul J. Esatto, Jr.
Registration No. 30,749

SCULLY, SCOTT, MURPHY & PRESSER, P.C.
400 Garden City Plaza - Ste. 300
Garden City, New York 11530
(516) 742-4343

PJE:DAT:jam